

Claims

[c1] 1.A method for forming an elongated fused quartz article comprising the steps of:
a)feeding a generally quartz (SiO_2) material into a furnace;
b)fusing the quartz (SiO_2) material in a melting zone of the furnace under a gas atmosphere comprising a molecular deuterium (D_2) gas;
c)drawing the article from the furnace; and
d)optionally, baking the article in a gas atmosphere comprising a deuterium gas.

[c2] 2.The method of claim 1 further comprising the step of heat treating the article drawn from the furnace in a substantially hydrogen-free gas atmosphere or vacuum.

[c3] 3.The method of claim 1 wherein the gas atmosphere of steps b) or d) further comprises an inert gas or a mixture of inert gases.

[c4] 4.The method of claim 3 wherein the D_2 gas and inert gas or mixture of inert gases are present in a volume ratio of about 20% D_2 and about 10% inert gas or mixture of inert gases.

[c5] 5.The method of claim 3 wherein the D_2 gas and inert gas or mixture of inert gases are present in a volume ratio of about 90% D_2 and about 10% inert gas or mixture of inert gases.

[c6] 6.The method of claim 3 wherein the dew point of the gas atmosphere of step b) is about -30 ° C. to about 80 ° C.

[c7] 7.The method of claim 3 wherein the dew point of the gas atmosphere of step b) is about -20 ° C. to about 10 ° C.

[c8] 8.The method of claim 1 being a continuous process.

[c9] 9.The method of claim 1 wherein the article is a deposition tube.

[c10] 10.The method of claim 1 wherein the article is a sleeve tube.

[c11] 11.The method of claim 9 wherein the deposition tube has a hydrogen content of about 5×10^{-11} mol/g to about 5×10^{-8} mol/g.

[c12] 12.The method of claim 1 wherein the baking is carried out at a temperature of about 200 ° C. to about 1500 ° C.

[c13] 13.A method for forming an elongated fused quartz article comprising the steps of:
a)pretreating a generally quartz (SiO_2) material in a gas atmosphere comprising a molecular deuterium (D_2) gas;
b)feeding the pretreated quartz (SiO_2) material into a furnace;
c)fusing the pretreated quartz (SiO_2) material in a melting zone of the furnace under a gas atmosphere comprising a molecular deuterium (D_2) gas or a substantially hydrogen-free gas;
d)drawing the fused SiO_2 material article from the furnace to form the article;
and
e)heat treating the drawn article in a substantially hydrogen-free gas atmosphere or vacuum.

[c14] 14.The method of claim 13 being a continuous process.

[c15] 15.The method of claim 13 wherein the article is a deposition tube.

[c16] 16.The method of claim 13 wherein the article is a sleeve tube.

[c17] 17.The method of claim 13 further comprising the step of :
e)baking the fused SiO_2 article in a gas atmosphere comprising a deuterium gas.

[c18] 18.A method for forming a fused quartz article comprising the steps of:
a)providing a generally quartz (SiO_2) material; and
b)fusing the quartz (SiO_2) material in a gas atmosphere comprising a molecular deuterium (D_2) gas to form the quartz article.

[c19] 19.The method of claim 18 wherein the gas atmosphere further comprises an inert gas or a mixture of inert gases.

[c20] 20.The method of claim 18 further comprising the step of:
c)heat treating the fused SiO₂ article in a substantially hydrogen-free gas
atmosphere.

[c21] 21.The method of claim 20 wherein the heat treating is carried out at about 200
° C. to about 1500 ° C.

[c22] 22.The method of claim 18 wherein the article is a deposition tube.

[c23] The method of claim 18 wherein the article is a sleeve tube.

20190626144239300 20190626144239300